

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A process for injecting ~~fluids~~ a gas provided at a source pressure into a permeable solid having regions of varying density, comprising:

~~sizing an orifice to an accurate fluid flow rate;~~

flowing said gas through a needle having an orifice that accelerates said gas and an outlet for discharging said gas into said permeable solid against a back pressure;

~~combining said orifice with a needle for injecting fluid;~~ penetrating said needle and said outlet into said permeable solid;

injecting said gas into said permeable solid through said outlet while maintaining said source pressure at more than approximately twice said back pressure, but without causing substantial damage to said permeable solid;

whereby mass flow of said gas into said permeable solid becomes substantially independent of said back pressure during said injecting step, as long as said source pressure remains more than approximately twice said back pressure; and

~~said fluid is a gas;~~ whereby substantially the same mass of gas is injected per unit time into said regions of varying density in said permeable solid.

2. (currently amended) A process for injecting ~~fluids~~ gas using a needle having an orifice that has been sized to supply a desired gas flow rate at a particular source pressure, comprising:

flowing a pressurized ~~fluid source;~~ gas into said needle and through said orifice;

~~said pressurized fluid flows through an orifice and needle;~~

~~said needle penetrates a permeable solid;~~
penetrating a permeable solid with said needle so that said needle can inject said gas into
said permeable solid against a back pressure from said permeable solid;
maintaining pressure of said pressurized gas before said orifice at approximately twice
said back pressure, but without causing substantial damage to said permeable solid;
~~said orifice precisely controls the~~ wherein mass flow of said ~~fluid~~ gas through said needle
into said permeable solid during injection;—said fluid is gas becomes substantially independent
of said back pressure from said permeable solid.

3. (currently amended) A process for injecting fluids gas into a permeable solid, comprising:

providing a fluid gas at a fixed source pressure;
flowing said fluid flows gas through an orifice and needle sized to provide a
desired gas flow rate at said fixed source pressure and then through an independent needle for
said orifice;

~~said orifice accurately controls the constant flow of said fluid through said needle at said~~
~~fixed pressure;~~

~~said fluid is gas;~~

~~said needles penetrate a permeable solid;~~
penetrating a permeable solid with said needle so that said needle can inject said gas into
said permeable solid against a back pressure;

~~said gas is injected for the purpose of treating~~ injecting said gas into said permeable solid
while maintaining said fixed source pressure at more than approximately twice said back
pressure, but without causing substantial damage to said permeable solid.

4. (currently amended) A process for injecting ~~fluids~~ gas using a needle having an orifice that has been sized to provide a desired flow rate at a particular source pressure, comprising:

penetrating a permeable solid with said needle;

fluid flows injecting at a source pressure a gas through an orifice while the orifice size is adjusted;

adjustment of the orifice size stops when the desired flow rate is achieved; said orifice is used in conjunction with a needle to inject fluid- in said needle into said permeable solid against a back pressure from said permeable solid, wherein said source pressure is greater than about twice said back pressure, but without substantially damaging said permeable solid, whereby quantities of gas per unit time flowing through said needle into said permeable solid are substantially the same, regardless of any varying density in said permeable solid.

5. (currently amended) A process according to any one of claims 1 to 4, wherein said orifice is sized by crimping ~~or removing material from the~~ said orifice body to achieve said desired flow rate.

6. (currently amended) A process according to any one of claims 1 to 4, wherein said orifice is sized by ~~increasing or decreasing the~~ removing material from said orifice size to obtain said desired flow rate.

7. (canceled).

8. (currently amended) A process according to any one of claims 1 to 4, ~~further comprising~~ wherein:

said gas flow through the said orifice reaches approximately sonic velocity.

9. (canceled).

10. (canceled).

11. (currently amended) A process according to any one of claims 1 to 4, ~~further comprising~~
wherein:

~~said fluid is a gas or a liquid, or comprises a combination gas and liquid as a vapor, or a
combination of liquid and solid as a colloid.~~

12. (currently amended) A process according to any one of claims 2 1 to 3, 4, wherein said solid
is a food.

13. (currently amended) A process according to any one of claims 2 1 to 3, 4, wherein said solid
is selected from the group consisting of meat or fish.

14. (currently amended) A process according to any one of claims 1 to 3, 4, wherein said gas
~~contains any one of~~ is selected from the group consisting of carbon monoxide, carbon dioxide,
or ozone.

15. (currently amended) A process according to any one of claims 1 to 4 ~~further comprising 4~~,
wherein:

said penetrating step is performed with a multiplicity of needles.

16. (original) A process according to any one of claims 1 to 4, wherein said fluid flows at a
continuous rate.

17. (original) A process according to any one of claims 1 to 4, wherein said orifice is the internal
diameter of the needle.

18. (canceled).

19. (currently amended) A process according to any one of claims 1 to 4, wherein said orifice is
made using ~~any one~~ a method selected from the group consisting of LASER, EDM, drilling,
punching, and grinding, ~~or other mechanical or non-mechanical means.~~

20. (currently amended) A process according to any one of claims 1 to 4, wherein ~~the size of~~

said orifice is approximately equivalent to the cross sectional area of a circle with a diameter within a range of 0.002 inch (0.0508 mm) to 0.006 inch (0.153 mm).

21. (currently amended) A process according to any one of claims 1 to 4, wherein ~~the size of~~ said orifice is approximately equivalent to the cross sectional area of a circle with a diameter within a range of 0.0005 inch (0.013 mm) to 0.01 inch (0.254 mm).

22. (currently amended) A process according to any one of claims 1 to 4, wherein ~~the size of~~ said orifice is approximately equivalent to the cross sectional area of a circle with a diameter within a range of 0.0001 inch (0.00254 mm) to 0.02 inch (0.508 mm).

23. (canceled).

24. (currently amended) A process according to any one of claims 1 to 4, wherein ~~the volume of~~ said fluid flows through said needle ~~ranges at a rate~~ from 1.0 cc per second to 6.0 cc per second.

25. (currently amended) A process according to any one of claims 1 to 4, wherein ~~the flow rate of said fluid~~ flows through said needle ~~ranges at a rate~~ from 0.05 cc per second to 16 cc per second.

26. (canceled).

27. (currently amended) A process according to any one of claims 1 to 4, wherein ~~fluid~~ said source pressure is ~~within a range~~ from 50 P.S.I. (3.511 kg/cm²) to 750 P.S.I. (52.6674 kg/cm.²).

28. (currently amended) A process according to any one of claims 1 to 4, wherein said ~~needle penetration~~ penetrating step is performed at a continuous rate ~~during said injection of said fluids;~~ said continuous rate is of between approximately 0.5 inch per second (12.7 mm/sec.) and approximately 24 inches per second (609.6 mm/sec.).

29. (currently amended) ~~An apparatus~~ A device for injecting fluids comprising:

~~fluid is injected through an orifice and needle; — wherein the size of said orifice is approximately equivalent to the cross sectional area of a circle with a diameter less than 0.01 inch (0.254 mm)~~ a sized needle for injecting fluids having an orifice, wherein said needle has been sized to provide a predetermined flow rate substantially independent of back pressure by flowing gas through said orifice while adjusting the orifice size until said predetermined flow rate was achieved.

30. (currently amended) A ~~product for injecting fluids comprising:~~

~~an orifice and needle;~~ sized needle according to claim 29, wherein the size of said orifice is approximately equivalent to the cross sectional area of a circle with a diameter less than 0.01 inch (0.254 mm).

31. (currently amended) A process according to any one of claims 1 to 4, ~~further comprising:~~

wherein said gas is provided at said source pressure through a gas manifold connected to a multiplicity of said needles in a , said gas manifold with having a gas delivery system and driven by a hydraulic drive system for injection into said permeable solid .

32. (canceled).